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SUPPLY CHAIN MANAGEMENT AND ITS RELATIONSHIP TO LOGISTICS, MARKETING, PRODUCTION, AND OPERATIONS MANAGEMENT

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Abstract:
The renaming of the Council of Logistics Management (CLM) to the Council of Supply Chain Management Professionals (CSCMP) ushered in some interesting definitional dialogue and debate within the practitioner and academic communities. Inherent in emerging definitions is the notion that SCM encompasses activities traditionally considered aspects of production, logistics, marketing, and operations management. Defining SCM in such a broad scope (i.e., a "within" and "across" functions perspective), while considered by many scholars as the true representation of the essence of SCM, creates confusion regarding the appropriate organizational level within a business that is best suited for managerial decision making regarding the phenomenon. This paper contributes to the emerging SCM dialogue by highlighting the functional spaces (the "within" function perspective), relationships, and conceptual overlaps (the "across" functions perspective) between marketing, logistics, production, operations, and supply chain management. By comparing and contrasting the literature-based conceptual boundaries of each discipline, a framework is proposed that more clearly captures the essence of the SCM decision making sphere. Managerial insights and future research implications are presented. [PUBLICATION ABSTRACT]

Full text:

INTRODUCTION

The renaming of the Council of Logistics Management (CLM) to the Council of Supply Chain Management Professionals (CSCMP) ushered in some interesting dialogue and debate within the practitioner and academic communities. Core to this dialogue is discussion concerning the definition and scope of logistics management relative to supply chain management (SCM) and the most appropriate conceptualization of the two disciplines. While the emerging definitions rightly consider SCM to be a cross-disciplinary concept, there is increasing confusion regarding the organizational level within a business that has best claim to ownership of managerial decisions related to the phenomenon (Larson, Poist, and Halldorsson 2007; Stank, Fugate, and Davis 2005). Academics and practitioners provide anecdotal evidence that the "turf war" emerging over SCM decision making carries very real and significant ramifications. In business, the result of the turf war is germane to organizational structure, corporate culture, strategy, and budget decisions. During a recent meeting of a professional organization, for example, a senior logistician with a Fortune 500 corporation expressed frustration to the authors that the "supply chain" organization in his firm fell under the auspices of the COO, an executive who had risen through production. In this organization, the bounds of SCM were defined as extending upstream from production to key vendors and involved only raw materials and sub-component flows. Initiatives involving finished goods distribution issues were largely marginalized. Conversely, other "supply chain organizations" essentially represent a new name for the same activities that comprised the old logistics department, with an exclusive focus on finished goods distribution and very little interaction with inbound flow processes or production shop floor issues.

In academia, the determination of a definition and bounds for "SCM" has very real implications for faculty. Awarding faculty lines, merit raises, budgets, curriculum design, and tenure and promotion decisions all have far reaching impact on the personnel populating a business school and the resulting research and teaching

curriculum they create. For example, if SCM is "owned" by operations research/management scientists, research will involve mathematical modeling and teaching will focus on decision analysis tools. Alternatively, if SCM is "owned" by marketing, for example, then SCM tends to resemble marketing channels; if owned by purchasing it resembles strategic procurement; if owned by logistics it resembles integrated logistics, and so on. According to the current definitions, however, SCM is not "owned" by any one discipline or department, but rather is a phenomenon that touches nearly all areas of business.

In an effort to contribute to this ongoing discussion, CSCMP (2007) developed and suggested a definition of SCM. Gibson, Mentzer, and Cook (2005) took the two definitions developed by CSCMP (one subsequently became the "official" CSCMP definition) and surveyed CSCMP members to assess consensus. For emphasis, Gibson, Mentzer, and Cook (2005) underlined the differences between these two alternatives. A strong majority of respondents felt SCM encompassed supplier and customer collaboration (80.8%), while a much smaller percent felt information technology (49.7%), marketing (39.4%), finance (32.4%), sales (32.4%), and product design (24.3%) were also encompassed in SCM.

The two definitions developed by CSCMP were:

Alternative A - "Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, Supply Chain Management integrates supply and demand management within and across companies."

Alternative B - "Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, demand creation and fulfillment, and all Logistics Management activities. Thus, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, Supply Chain Management integrates supply and demand management within and across companies."

Indicative of the on-going debate over the definition of SCM, Definition B generated statistically stronger support from respondents, but the CSCMP Executive Committee adopted Alternative A as the organization's official definition of SCM.

In a similar earlier effort, the Supply Chain Research Group at the University of Tennessee (Mentzer et al. 2001, Mentzer 2001, 2004) reviewed the existing SCM definitional literature, and conducted interviews with practicing SCM executives in 20 companies to define SCM as:

"...the systemic, strategic coordination of the traditional business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole."

The Supply Chain Council at The Ohio State University (Cooper, Lambert, and Pagh 1997) argued that SCM is more comprehensive than logistics, encompassing the management of multiple business processes (including logistics processes); involves frequent information updating among supply chain members for effective supply chain management; and utilizes organizational relationships that tie the success of firms to each other and to the supply chain as a whole. More specifically, the Ohio State model suggests that SCM involves the management of eight business processes; two of which, Customer Relationship Management (CRM) and Supplier Relationship Management (SRM), form critical links across the supply chain. The other six processes (Customer Service Management, Demand Management, Order Fulfillment, Manufacturing, Flow Management, Product Development and Commercialization, and Returns Management) are coordinated through SRM and CRM.

What is common across these definitions of SCM is:

* Coordination/collaboration with suppliers and customers (all three);
* Demand and supply side matching (all three);

* A flow perspective (although the Ohio State and Tennessee definitions specifically address these flows, the CSCMP definition subsumes the flows under their Logistics Management definition).

Despite these commonalities, ambiguity still exists in terms of clearly defining the boundaries of SCM relative to other, more functionally-oriented business disciplines. Thus, there is no one "received view" of the definition of SCM. Inherent in the definitions, however, is the notion that SCM is closely related to activities traditionally considered aspects of production, logistics, marketing, and operations management (Gibson, Mentzer, and Cook 2005). To avoid confusion, production - including services - is defined in this paper as the activities associated with classical economic physical transformation utility, while operations management refers to decision-making and problem solving that involves application of operations research and management science (OR/MS) quantitative methods across functional areas of the firm. The broad definition of SCM, while considered by many scholars as the true representation of the essence of SCM, blurs the boundaries between the traditional business disciplines/functions and SCM. The purpose of this paper is to encourage discourse regarding the notion that while SCM is indeed a cross-disciplinary concept distinct from any functional "home," a better understanding is needed regarding concepts that are inherently SCM and those that are more appropriately considered unique to a functional discipline such as logistics, marketing, or production.

Such debate is common in the development of disciplines of study. For example, the broad area of social science eventually evolved into (at least) the separate disciplines of psychology (which makes assumptions about the study of individuals), socio-psychology (which makes assumptions about the study of individuals in groups), sociology (which makes assumptions about the study of groups), and anthropology (which makes assumptions about the study of cultures). Similarly, the purpose of this paper is to separate the "within and across" assumptions of the existing definitions of SCM into what is within the traditional business functions (such as logistics or marketing) from disciplines that take a perspective across disciplines (such as operations management and SCM).

Specifically, this paper seeks to refine the SCM definition dialogue by highlighting the functional spaces, relationships, and conceptual overlaps between marketing, logistics, production, operations management, and supply chain management phenomena. By comparing and contrasting the literature-based conceptual boundaries of each discipline, a framework is proposed that more clearly defines the scope of SCM decision making relative to the aforementioned disciplines. Managerial insights and future research implications of the SCM framework are also presented.

MARKETING MANAGEMENT

The American Marketing Association (2007) defines marketing as:

"an organizational function and a set of processes for creating, communicating, and delivering value to customers and for managing customer relationships in ways that benefit the organization and its stakeholders," and marketing management as:

"The process of setting marketing goals for an organization (considering internal resources and market opportunities), the planning and execution of activities to meet these goals, and measuring progress toward their achievement."

Debate in the 1970s concerning the definition of marketing culminated in Bagozzi (1975) concluding that the key factor in understanding marketing was the exchange of value, or exchange transformation (what has been traditionally called the economic utility of possession). These exchanges can involve individuals, organizations, society, and all their various stakeholders. Exchange can be classified as utilitarian, symbolic, or mixed (Bagozzi 1975). Utilitarian exchange is "an exchange whereby goods are given in return for money or other goods and the motivation behind the actions lies in the anticipated use or tangible characteristics commonly associated with the objects in the exchange" (Bagozzi 1975, p. 36). This type of exchange is exemplified by Winer's (2004) comment that customers, "buy products for the benefits that the product features provide" (p. 10). Symbolic exchange is "the mutual transfer of psychological, social, or other intangible entities between two

or more parties" (Bagozzi 1975, p. 36). Mixed exchange involves both utilitarian and symbolic benefit, and it is "often very difficult to separate the two" (Bagozzi 1975, p. 36).

This broader perspective leads to the "value-adding" dimension of marketing, which "could be a brand, customer service, packaging, or anything the marketer adds to differentiate it from what might be called the 'commodity' version of the product" (p. 15). More recently, debate in marketing has argued a service-dominant perspective, whereby intangible exchange processes and relationship management are central to the marketing concept, placing more emphasis on organizational knowledge and skills (Vargo and Lusch 2004). Topics such as customer relationship marketing, services marketing, supply chain management, and market orientation are associated with this perspective. Though the dominant paradigms have evolved, the following key elements of the marketing domain have remained constant and underscored any dominant perspective of the marketing concept:

* Market opportunity assessment;
* Customer value assessment;
* Forecasting demand based upon the potential of the first two;
* Product/service management;
* Customer communication (including advertising, sales, promotion, and public relations);
* Distribution channel strategy; and
* Pricing (as an indicator of cost and value to the final customer and channel partners).

LOGISTICS MANAGEMENT

At the most basic level, logistics management is concerned with the effective movement and storage of product, approximating the traditional economic utilities associated with creating value through time and place transformation (Chase, Jacobs, and Aquilano 2006). CSCMP (2007) offers the following definition:

"Logistics management is that part of Supply Chain Management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customer requirements."

Logistics, therefore, involves managing facilities, transportation, inventory, materials, order fulfillment, communications, third party providers and information within the firm in a way that contributes to customer value (Novack, Rinehart, and Wells 1992).

While originally considered a function with little added value, and primarily focused on cost management (Langley 1986), logistics has evolved into a source of competitive advantage (Bowersox, Closs, and Stank 1999; Daugherty, Stank, and Ellinger 1998; Kent and Flint 1997; Lynch, Keller, and Ozment 2000; Zhao, Droge, and Stank 2001). By delivering customer value through quality logistics service (Mentzer, Flint, and Huit 2001), firms are able to gain competitive positioning in an area not as easily duplicated as price and promotion (Bowersox, Mentzer, and Speh 1995). Hence, leveraging logistics management allows organizations to achieve customer satisfaction and competitive advantage through inventory availability, timely delivery, and lower levels of product damage (Bowersox and Closs 1996; Day 1994; Mentzer and Williams 2001; Morash, Droge, and Vickery 1996; Olavarrieta and Ellinger 1997).

Logistics management has undergone a significant evolution that not only impacts the way logistics is managed within the corporate environment, but also the key themes and techniques investigated by logistics researchers (Kent and Flint 1997). Early logistics research focused primarily on defining the sub-functions associated with physical distribution, including warehousing, inventory management, and inbound and outbound transportation, and managing those functions most efficiently. Beginning in the early 1960s the prevailing focus of logistics research involved studying system wide inventory levels, facility locations, and logistics network design. Logistics researchers began to focus on customer service in the early 1970s, with concepts such as EDI, interorganizational and interfunctional integration, and relationships emerging as key areas of exploration throughout the 1980s and 1990s.

The modern era of logistics management research can be conceptualized as one that focuses, to some degree, on all of the aforementioned themes. In essence, current logistics research explores the systematic management of logistics functions for effective customer service, total cost efficiency, competitive advantage, and, ultimately, enhanced organizational performance. The domain of logistics management, therefore, can be seen as consisting of the following key elements:

* Transportation network design and management;
* Warehousing techniques including location, design, and management;
* Materials handling management;
* System wide inventory management;
* Order management and fulfillment;
* Procurement; and
* Customer service.

PRODUCTION MANAGEMENT

One of the greatest challenges to the creation of an effective framework that delineates the various operational activities of an organization is the determination of a distinction between logistics and operations management. As expressed in the previous section, early logistics research explored efficient warehousing, materials and inventory management, and inbound and outbound transportation. Yet management of these activities shares a distinct similarity with operations management activities. In fact, many of the issues commonly covered in logistics research, teaching, and practice (for example, facility location, order management, and procurement) are also considered core elements of operations management. It is not surprising, therefore, to discover a general confusion regarding where the domain of logistics ends and the domain of operations management begins.

The earliest research in managerial systems dealt with production, and indeed, the managerial system was thought of as the production operations system by classical economists (Buffa 1982). The definition of operations management as expressed by the introductory textbooks, therefore, was virtually the entire field of industrial management, including chapters on personnel, finance, marketing, distribution, organization, production, and general management. As business thought evolved, the individual functional fields of management and the field of general management spun off and "operations" was left with topics related to production system techniques such as time and motion study, plant layout, Gantt's production control boards, EOQ inventory modeling, and descriptions of how production systems work (Buffa 1982; Levitt 1972). Over time, operations management expanded to include the study of service operations systems as a natural broadening of production management (Levitt 1972). Advances in operations research and management science provided the scientific methodology that allowed operations researchers to develop a better understanding of the basic mechanics of production and service subsystems related to inventories, scheduling, aggregate planning, quality control, and capacity planning (Buffa 1982; Levitt 1972).

Research conducted over the last 25 years that quantified the topical coverage of operations management, however, shows that operations management topics are far broader than what would be expected from a simple focus on production and service (see, for example, Amoako-Gyampah and Meredith 1989; Barman, Tersine, and Buckley 1991; Ghosh 1994; Miller and Graham 1981; Pannirselvam et al. 1999). Pannirselvam et al. (1999), for example, reported frequencies of operations management topics published in seven academic journals and conference proceedings (Decision Sciences, HE Transactions, International Journal of Operations and Production Management, International Journal of Production Research, Journal of Operations Management, Management Science, and Production and Operations Management Journal, and conference proceedings of the Decision Sciences Institute and the Production and Operations Management Society annual meetings) for the period 1992 through 1997. Topics associated with scheduling accounted for 25.54% of the articles reviewed, followed by inventory control (16.19%), quality (11.34%), process design (11.29%), strategy

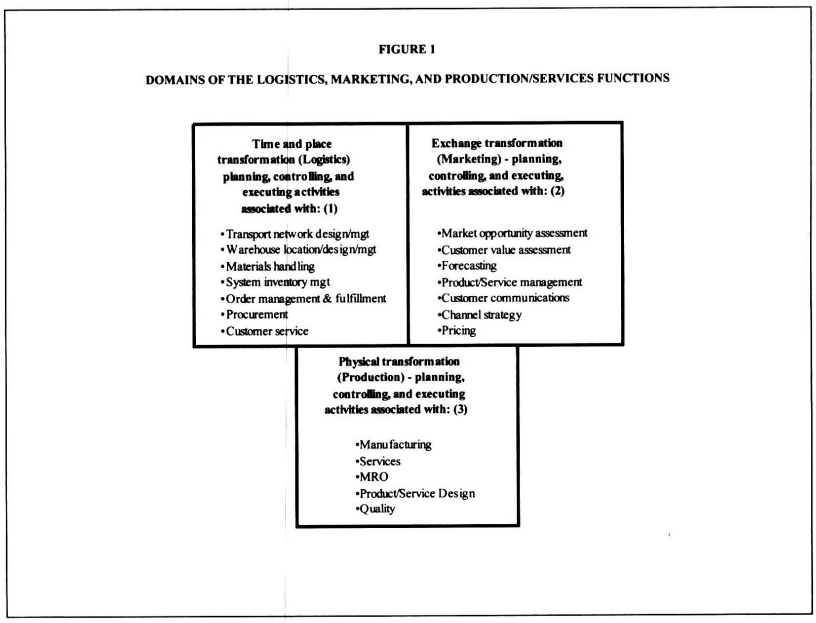
(10.88%), and facility layout (7.61%). The remaining topics (distribution, services, capacity planning, maintenance, purchasing, project management, facility location, forecasting, aggregate planning, work measurement, and quality of work life) together comprised 17.15%. Many of these topics are similarly, and logically, claimed by logistics researchers.

To resolve this dilemma, we propose that the domain of operations management can be partitioned into topics and activities that narrowly refer to the traditional focus on production and service system management, and those that reflect the broader interpretation of operational scope listed above. The traditional production and service focus can be called Production (including services) Management, and addresses the fourth classical economic utility of form. The domain of production management, therefore, includes the following elements:

* Manufacturing and production systems;
* Services;
* Maintenance, repair, and operations (MRO);
* Product/service design; and
* Quality.

These topics, however, clearly ignore the broader scope of operations management. The following section delineates the domain of this broader interpretation of operations management.

Figure 1 portrays the elements associated with the domains of Logistics, Marketing, and Production, respectively.



(1) Based upon Bowersox, Closs, and Stank 1999; Chase, Jacobs, and Aquilano 2006; Daugherty, Stank, and Ellinger 1998; Kent and Flint 1997; Langley 1986; Lynch, Keller, and Ozment 2000; Novack, Rinehart, and Wells 1992; Zhao, Dröge, and Stank 2001.

(2) Based upon American Marketing Association 2007; Bagozzi 1975; Winer 2004.

(3) Based upon Amoako-Gyampah and Meredith 1989; Barman, Tersine, and Buckley 1991; Buffa 1982; Ghosh 1994; Levitt 1972; Miller and Graham 1981; Pannirselvam et al. 1999

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OPERATIONS MANAGEMENT

The literature reflects the confusion associated with the definition of operations management as compared to the functional management of production. At the fundamental level, operations management has been associated with issues such as aggregate planning, capacity planning, facility design and location, forecasting, maintenance, manpower scheduling, process design, project management, quality of work life, job scheduling, and work measurement (Robinson and Sahin, 2006). At a broader level, however, operations management can be characterized as decision-making and problem solving that involves application of operations research and management science (OR/MS) quantitative methods to support the efficient and effective allocation of scarce

resources associated with an organization's operations (Robinson and Sahin 2006). When viewed from this broader perspective, operations management can be defined as:

applying analytical tools and frameworks to improve business processes that cross internal functional boundaries.

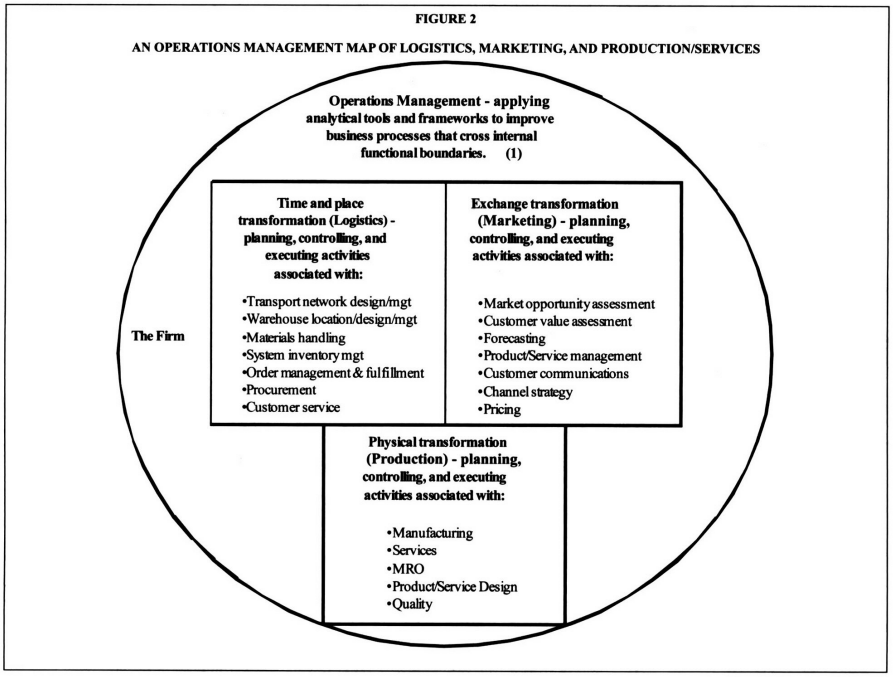
Internal processes that fall within the purview of operations management include place/location and time/storage transformation (or logistics), possession/exchange transformation (or marketing), and physical transformation (or production/service) (Chase, Jacobs, and Acquilano 2006). According to this definition, the distinguishing aspect of functional management, as compared to operations management, is that the scope and domain of functions are narrowly defined as focusing on:

planning, controlling, and executing existing management activities that fall within the sphere of each individual functional area.

Figure 2 portrays the broad scope of operations management and its relationship to the functional transformation processes that occur within the firm. While functional management focuses on existing activities and the most efficient control and execution of such activities, operations management is more focused on enhanced firm effectiveness and efficiency through process improvement, planning, and control. Hence, functional management is about executing processes, while operations management is more directly concerned with improvement of processes particularly as related to coordination of the cross-functional interfaces within a firm. Importantly, Figure 2 does not seek to suggest that OM is "elevated" in status or importance above logistics, marketing, and production management. Rather, it portrays that there are differing levels of interactivity for each managerial area listed within the functions. When the scope of decision-making for each area of management crosses functional boundaries, it may then be considered to be within the managerial realm of operations management.

FIGURE 2

AN OPERATIONS MANAGEMENT MAP OF LOGISTICS, MARKETING, AND PRODUCTION/SERVICES



(1) Based upon Chase, Jacobs, and Acquilano 2006; Robinson and Sahin 2006.

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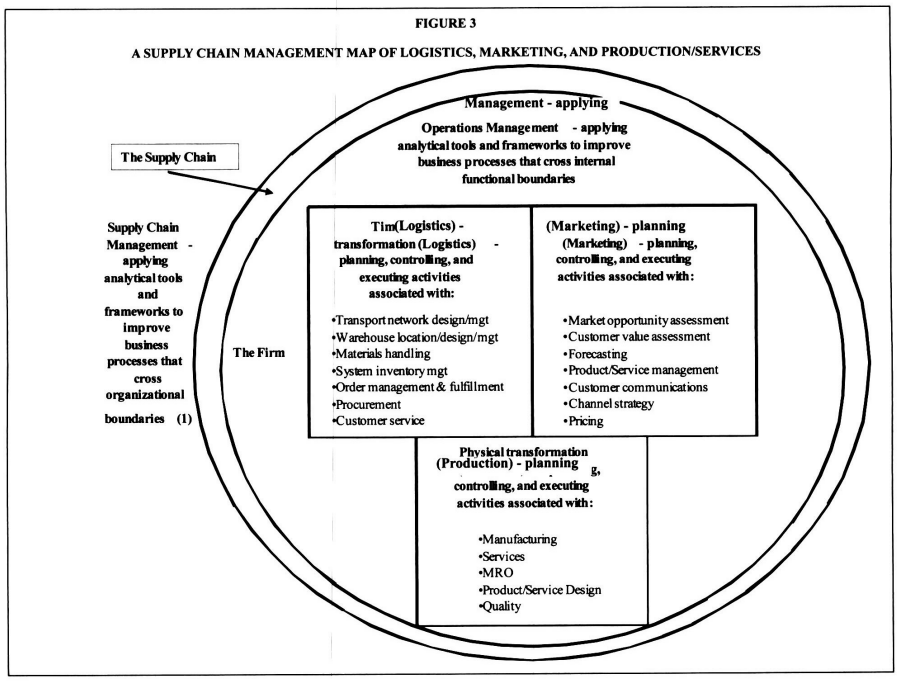
SUPPLY CHAIN MANAGEMENT

If operations management entails applying analytical tools and frameworks to improve business processes that cross internal functional boundaries, then the domain of SCM - by virtue of its association with coordinating physical, relational, informational, and financial flows to match demand with supply - includes:

Applying analytical tools and frameworks to improve business processes that cross organizational boundaries.

Figure 3 portrays the domain of SCM. Similar to the discussion of operations management, Figure 3 does not seek to suggest that SCM is "elevated" in $tatus or importance above the other areas, but rather portrays differing levels of interactivity for each managerial area listed within the functions. When the scope of decision-making for each area of management crosses organizational boundaries, it may be considered within the managerial realm of SCM. When one considers that all of the !managerial areas subsumed within the circle are part of SCM when they cross-organizational boundaries, the complexity of the area becomes apparent.



(1) Based upon CSCMP (2007); Cooper, Lambert, and Pagh 1997; Gibson, Mentzer, and Cook 2005; Mentzer et al. 2001; Mentzer 2001 and 2004.

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Examples of applications of operations management and SCM in each of the three functions may prove beneficial in order to further distinguish between functional management, operations management, and supply chain management. Take, for instance, the example of inventory management within the logistics function. Much of the research and managerial practice involving inventory management is operationally focused on handling, storing, accessing and shipping inventory. Such activities are carried out using resources that fall exclusively within the context of logistics and logistics management. Performance objectives for these activities are focused on providing the desired level of inventory availability and timeliness to immediate downstream customers while minimizing the costs associated with personnel, equipment, and inventory required to achieve established service levels, given the constraints imposed by factors outside the purview of logistics.

As inventory moves through an organization, however, it crosses functional boundaries and involves processes and resources from other areas within a firm. For example, decisions regarding ordering and availability of inventory to satisfy end customer demand while considering the impact on and from raw material/sub-component procurement and production to optimize firm level performance involves resources and processes owned by multiple functional areas. Purchasing (or merchandising in a retail environment) may be responsible for interacting with logistics to monitor inventory levels and place orders with vendors when appropriate. Interaction with sales and marketing is required to determine the level of expected future demand, promotions, impact of competitive products or new products, etc. Management and improvement of such cross-functional processes clearly falls outside the scope of the inventory manager. It also is beyond the bounds of procurement, production, and marketing managers, although each owns some element of work that contributes to the decision. Decision-making and management at this level, therefore, requires interaction between functional areas. Such interactive management and decision-making takes on the nature of a firm-wide operations

management problem and requires information, tools, and skills that are not unique to any one functional area. When the scope of the example above is expanded to include decision making and management of relationships with vendors, service providers, and customers, information system connectivity, cross-organizational performance measurement and management, and operational alignment for the benefit of the focal firm as well as suppliers and customers, then the problem falls within the scope of SCM. Management at the SCM level requires skills, tools, and managerial orientations that differ considerably from those required for functional and/or intra-firm operations management.

While it is tempting to say that the SCM case above is an example of a modern logistics phenomenon (per the CSCMP definition of logistics, for example), we contend that colleagues in production and marketing - not to mention accounting, finance, strategic management, etc. - would beg to differ. This is NOT to say that logistics, or any other functional area for that matter, is less important than any other managerial area. It simply clarifies the bounds of logistics and the scope of logistics activity and performance impact. Certainly it is appropriate for logisticians to be educated in the greater firm and supply chain implications of their focal phenomena. When making decisions in this realm, however, they are acting as supply chain managers and as such it is appropriate that their decisions are coordinated by firm or supply chain level executives. It also points out the folly of holding logistics managers responsible for significant changes in performance in areas that include processes and activities that fall outside their purview. Perhaps a better way to portray this is to say that while activities that are inherently logistics will always remain logistics, the decision-making scope changes as it expands across functional and organizational boundaries. This changing decision scope suggests a need for different managerial mindsets, tools, and frameworks.

Similarly, when we examine the activities and decision rules surrounding shop floor execution and management, we encompass such production management issues as union negotiations, job descriptions, machine utilization, and workload scheduling. The resources involved in such activities clearly fall within the control and ownership of production management. As the scope expands to managing the cross functional issues associated with these processes, then such operations management techniques as time-motion studies, six-sigma, and lean come into play. Although many of these techniques have been developed and continue to be applied in production management, when applied to cross-functional, intra-firm activities focused on firm level performance they require different skills, information, and managerial mindsets. When the scope of management control is expanded to examine, for example, who in the supply chain should perform certain production functions (i.e., functional shifting), how this will be assigned in a collaborative framework, and what is a fair measurement and compensation scheme so all supply chain members (suppliers and customers in addition to the focal firm) are properly engaged, then the problem falls within the scope of SCM.

Finally, marketing activities exist at all three levels of managerial focus. They may be focused solely on issues related to marketing functional performance, may be part of firm-level decision-making, or may be "infused" into cross-organizational business processes to ensure an end customer or market perspective (Srivastava, Shervani, and Fahey 1999). For example, advertisement composition and design, media buys, and anticipating promotional lifts in demand from the advertising plan falls clearly within the scope of marketing management. When we expand the scope of focus to examine the improvement of firm level organizational processes such as how advertising and promotion fit into the overall Sales and Operations Planning process of the organization, it can be considered operations management. When we examine how companies share advertising responsibilities (cooperative advertising, for example) for the benefit of all members of the supply chain, or ask vendors to develop production plans based on forecasts of end customer or consumer demand, then the emphasis shifts to SCM. Table 1 provides further examples of the classification framework from the perspective of each of the focal functional areas.

TABLE 1

EXAMPLES OF VARYING DECISION SCOPE OF PHENOMENA

	FUNCTIONAL AREA		
DECISION SCOPE	Logistics	Production	Marketing
Functional	Inventory placement; Inventory management	Machine and labor utilization; Workload scheduling	Personnel selling; Sales Management; advertising; promotion
OM	MRP; S&OP	MRP; S&OP	S&OP
SCM	VMI; CPFR	CPFR; Strategic Procurement	CRM; CPFR

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IMPLICATIONS

Understanding the domains and limits of different areas of business study aids both practitioners and researchers/academics. Thus, the frameworks presented in this paper have both managerial and research/academic implications.

Managerial Implications

In any area of inquiry, defining its limits (i.e., what it is and what it is not) has considerable implications for practitioners. Focusing practice and discovery - whether in the social sciences, medical sciences, physics, business, etc. - provides a common understanding and basis for decision-making. This promises to benefit managers in at least two significant ways.

First, a clear delineation of the domains of logistics, marketing, production, operations management, and SCM should help firms clarify the level of decision making scope required for change initiatives. Many functional managers, for example, are frustrated by assignments that require significant cross-functional buy-in and participation yet are not given the authority to guarantee it. Inventory improvement initiatives, for example, are often sub-optimized because improvements in inventory turns while maintaining or improving service to customers requires the participation not only of warehousing and transportation, but also procurement, sales, marketing, production, accounting, and finance. When responsibility is given solely to a functional manager, the outcome is destined to be sub-optimal. A better approach would be to acknowledge that improvements in inventory turns are the responsibility of many functional managers, and therefore should be assigned to a cross-functional, firm-level manager (such as the COO) for execution. Similarly, cross-organizational initiatives must fall within the purview of managers with cross-organizational clout, i.e., the executive level, if they are to succeed.

Second, understanding the domains of logistics, marketing, production, operations management, and SCM should help firms map out the skills necessary for managers in each area, both at the entry level and as careers progress. At the functional level (entry level or front line management positions), deep knowledge of the functional activities, an inventory of the skills necessary, as well as the impact of the various skills on functional efficiency and effectiveness are required. Categorizing the inventory of skills into the functions of logistics, marketing, and production helps guide corporate training programs, focus recruiting of entry level candidates, and define functional responsibilities and organizational structure within the firm. An indication of the importance of this topic is evidenced by current efforts by professional organizations, including CSCMP, APICS, and AST&L, to ensure a clear delineation of the fields and to enhance interaction among them to provide their respective members access to educational offerings unique to each while reducing redundancy of programs.

At the firm level (mid-level management), broad knowledge is required of cross-functional trade-offs, interfunctional coordination, cross-functional teaming abilities, plus knowledge of the analytical tools available to assess functionally-integrative processes. Again, this knowledge inventory should direct intra-firm efforts to recruit and train mid-level managers, and organizational control of various functions and their cross-functional

processes.
At the inter-organizational level (upper-level management), broad knowledge is needed of cross-organizational trade-offs, inter-firm coordination, and cross-organizational teaming abilities, plus knowledge of the analytical tools to assess organizational integration processes. This is a large step toward defining the roles of the chief supply chain management officer in individual firms, and how they should interact with their counterparts at partner firms.
In addition to skill sets for different managerial levels, the framework also suggests potential changes to organizational structure. One high-level operations executive for a Fortune 500 firm commented that this framework suggests a new organizational structure that recognizes functional level operations managers (e.g., Director of Logistics), firm level operations managers (e.g., COO), and a new cross-organization level operations manager called a Chief Supply Chain Officer (CSCO) with broad responsibility for the processes that cross the focal firm and extend to goods and service suppliers as well as customers. Clear reporting responsibilities for functional level managers could be matrixed to the COO or the CSCO, depending upon the decision scope and sphere.
Research/Academic Implications
There are also implications for researchers and academic programs that contribute to the bodies of knowledge and/or teach logistics, marketing, production, operations management, and SCM. The frameworks presented above provide a differentiation schema for academics to better understand the interrelationships among the core disciplines associated with SCM. This understanding enables program and curriculum development free of the unnecessary duplication of content that has become commonplace due to the confusion over discipline domain and scope. It also provides a platform for future debate.
The differentiation schema suggests that functional departments in colleges of business should focus on research and teaching of functional knowledge (i.e., planning, controlling and executing intra-fiinctional activities), as well as the role of the function within broader processes related to cross-functional management (i.e., operations management) and cross-organizational management (i.e., SCM). Within this differentiation schema, for example, a logistics department might focus on research and teaching transportation management and load consolidation, as well as emphasize the role of improved transportation utilization and service performance in overall operational network design within the firm (operations management) and between entities in the supply chain (supply chain management).
Operations management faculty might focus on research and teaching that concentrate on managing and assessing firm-level processes. To continue the previous example, if logistics faculty represent the expertise in transportation and transportation management, operations management faculty represent the expertise in firm level process optimization, including understanding how transportation - as well as marketing, sales, distribution, and production - must interact to achieve optimal levels of firm cost and service performance commensurate with overall firm strategy. A true SCM research and teaching program, since it involves all functions as well as management of overall firm processes (i.e., operations management), would then exist within the realm of the overall college of business. Again drawing upon the previous example, SCM faculty would focus on problems related to the optimization of internal firm functions, as well as extending optimization to include the operations of goods and service suppliers and customers to determine how best to create end consumer value, supply chain partner value, and societal value.
Another implication of the framework for academics is to delineate the emphasis of different programs within a discipline. For example, undergraduate programs in logistics, marketing, and production should view their primary mission as providing insight at the functipnal level, largely concentrating on teaching students the necessary knowledge (including the inventory of skills mentioned in the previous section) about the various functions (especially the function that is the student's major), with less emphasis on operations management and SCM. Alternatively, masters programs should seek to provide a fairly even emphasis on functions,

operations management, and supply chain management, while senior management programs might place a very low emphasis on functional knowledge (presumably since much of this has already been learned by the executives in previous degrees and/or experience), with a stronger emphasis on operations management, and stronger still on SCM.

It is noted that all topics should be covered from a functional, cross-functional, and cross-organizational perspective in both undergraduate and graduate programs. It is not suggested, for example, that undergraduate students be educated solely as functional silo experts with little emphasis on general process management, integration with other functions (operations), or cross-firm integration, collaboration, and strategy (SCM) while graduate students emerge as generalists with no concept of functional activities. Rather, we are suggesting that all perspectives be covered in both levels of education, but that the emphasis in undergraduate be on functional knowledge while that of graduate programs be on integrative knowledge.

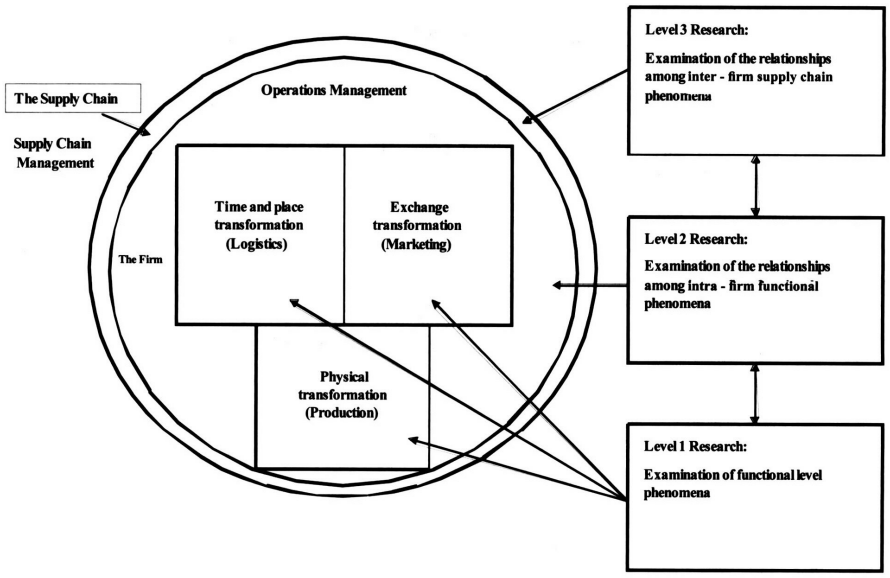
Another significant implication of the framework for researchers lies in research and journal positioning. As Figure 4 indicates, research can be categorized based upon the scope and domain of the phenomena of focus. Therefore, research may focus on various functional activities examined in isolation, or at the firm process level, or at the supply chain process level. Each level implies the examination of different factors (functional versus intrafirm versus inter-firm relationships) and different outcomes (functional versus firm versus supply chain metrics). For example, research focused exclusively on the relationship between transportation time/variance, inventory levels, and customer delivery service may appropriately be targeted to ajournai favoring intrafunctionally-oriented logistics research. Research focused on the role transportation plays in determining the best location of production and distribution facilities or in the choice between make-to-order or make-to-stock production and order fulfillment, however, might be more appropriately targeted to a journal focused more heavily on interfunctional, i.e., operations management, research. Research focused on the role of transportation performance in supply chain risk management, for example, might be best suited for a journal that is more heavily focused on inter-organizational, i.e., supply chain management, research.

Academic journals may choose to use Figure 4 as a classification for segmenting the articles that they publish. For instance, a journal that views its primary mission as the examination of logistics phenomena may choose to publish articles at any of the three levels. Articles representing the first level would specifically address relationships among logistics phenomena, articles at the second level would look at the role of logistics in broader firm-level processes, and articles at the third level would examine the role of logistics in overall SCM. Similar segmentation could be conducted for journals focused predominantly on marketing or production.

Similarly, researchers could target publication of their research based upon Figure 4. Research that is primarily focused on specific functional activities would be aimed at the journals in those functions. Research aimed at the role of a function vis-à-vis its broader interaction with other areas within the firm could be positioned either at a functional journal or an operations management journal. Research focused on the role of a function within the overall supply chain could be positioned at a functional journal or a SCM journal. Further, research aimed at journals at the second level could address the specific functions as long as the orientation was on the processes of managing the functions. However, journals professing to be SCM journals should not consider research aimed at specific intra-firm functions, unless their focus is on the dynamics of the function within the overall supply chain, and submissions to these journals should align accordingly.

FIGURE 4

A HIERARCHY OF RESEARCH FOCUS



Enlarge this image.

Finally, as mentioned previously, this framework should serve as a platform for future debate. It is the responsibility of the academic community to continually question and examine the domains and the limits of the research areas discussed in this paper to reach an ever-evolving consensus on what is included in each area and what is not. Based upon this schema, a future research challenge is to more fully delineate the inventory of functional skills that are contained within each of the functions. Though beyond the scope of this paper, this is an area critical to the on-going debate over the domains of each discipline, and should be pursued by future research. Only through this process can managers better understand the areas they manage, journals position the areas of research in which they are interested, and researchers, accordingly, aim their works at the appropriate outlets. Such appropriate alignment will prove beneficial to the on-going dialogue to define SCM and its associated disciplines, and the appropriate management of each within the business community.

Sidebar

The renaming of the Council of Logistics Management (CLM) to the Council of Supply Chain Management Professionals (CSCMP) ushered in some interesting definitional dialogue and debate within the practitioner and academic communities. Inherent in emerging definitions is the notion that SCM encompasses activities traditionally considered aspects of production, logistics, marketing, and operations management. Defining SCM in such a broad scope (i.e., a "within" and "across" functions perspective), while considered by many scholars as the true representation of the essence of SCM, creates confusion regarding the appropriate organizational level within a business that is best suited for managerial decision making regarding the phenomenon. This paper contributes to the emerging SCM dialogue by highlighting the functional spaces (the "within" function perspective), relationships, and conceptual overlaps (the "across" functions perspective) between marketing, logistics, production, operations, and supply chain management. By comparing and contrasting the literature-based conceptual boundaries of each discipline, a framework is proposed that more clearly captures the essence of the SCM decision making sphere. Managerial insights and future research implications are presented.

Key Words: Logistics; Marketing; Operations management; Production; Supply chain management

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NOTES

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